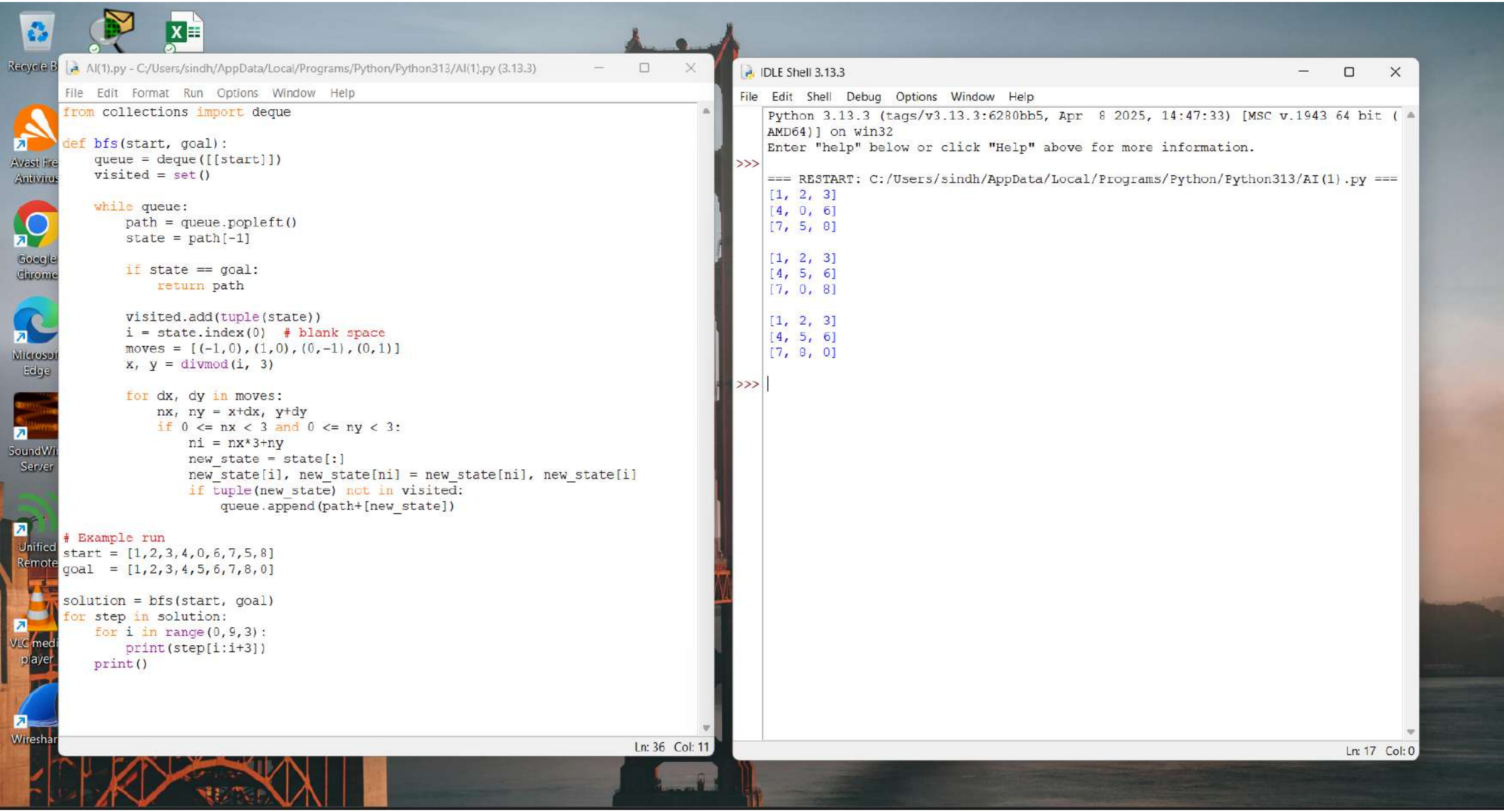
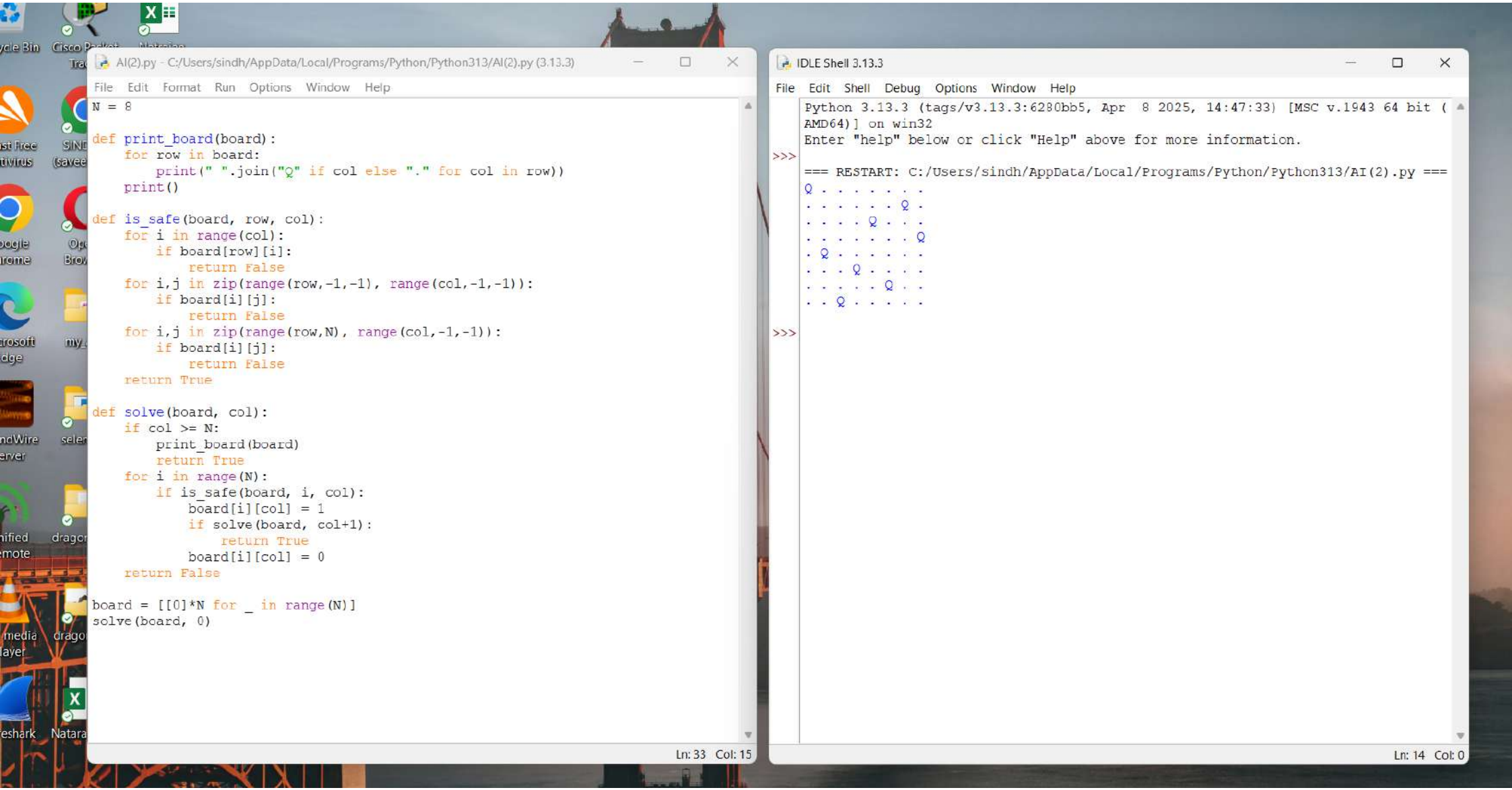
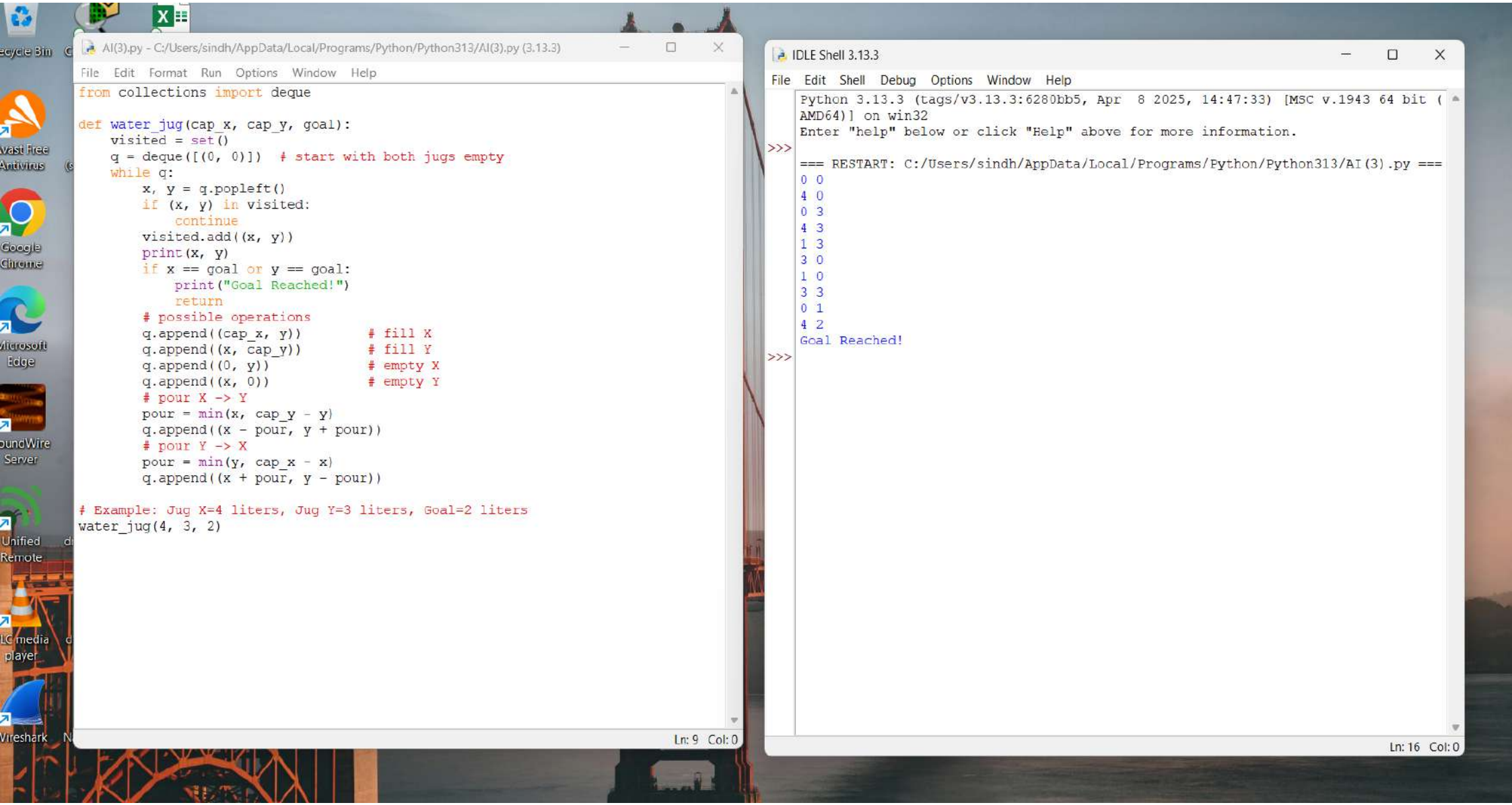
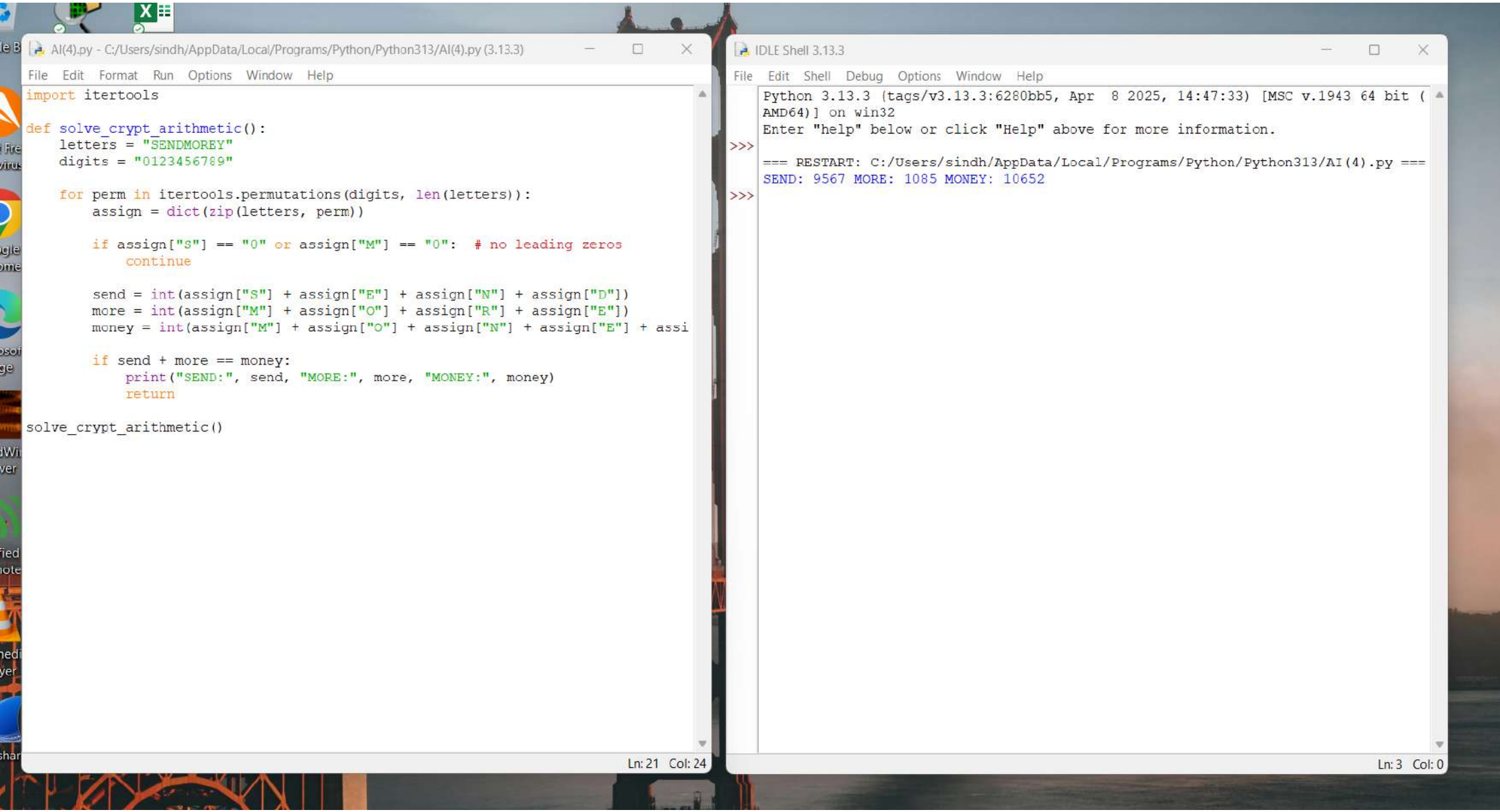

AI(1).py - C:/Users/sindh/AppData/Local/Programs/Python/Python313/AI(1).py (3.13.3)
File Edit Format Run Options Window Help
from collections import deque
def bfs(start, goal):
queue = deque([[start]])
visited = set()
while queue:
path = queue.popleft()
state = path[-1]
if state == goal:
return path
visited.add(tuple(state))
i = state.index(0) # blank space
moves = [(-1,0),(1,0),(0,-1),(0,1)]
x, y = divmod(i, 3)
for dx, dy in moves:
nx, ny = x+dx, y+dy
if 0 <= nx < 3 and 0 <= ny < 3:
ni = nx*3+ny
new_state = state[:]
new_state[i], new_state[ni] = new_state[ni], new_state[i]
if tuple(new_state) not in visited:
queue.append(path+[new_state])
# Example run
start = [1,2,3,4,0,6,7,5,8]
goal = [1,2,3,4,5,6,7,8,0]
solution = bfs(start, goal)
for step in solution:
for i in range(0,9,3):
print(step[i:i+3])
print()
Ln: 36 Col: 11
IDLE Shell 3.13.3
File Edit Shell Debug Options Window Help
Python 3.13.3 (tags/v3.13.3:6280bb5, Apr 8 2025, 14:47:33) [MSC v.1943 64 bit (
AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>>
=== RESTART: C:/Users/sindh/AppData/Local/Programs/Python/Python313/AI(1).py ===
[1, 2, 3]
[4, 0, 6]
[7, 5, 8]
[1, 2, 3]
[4, 5, 6]
[7, 0, 8]
[1, 2, 3]
[4, 5, 6]
[7, 8, 0]
>>>
Ln: 17 Col: 0


AI(2).py - C:/Users/sindh/AppData/Local/Programs/Python/Python313/AI(2).py (3.13.3)
File Edit Format Run Options Window Help
N = 8
def print_board(board):
for row in board:
print(" ".join("Q" if col else "." for col in row))
print()
def is_safe(board, row, col):
for i in range(col):
if board[row][i]:
return False
for i,j in zip(range(row,-1,-1), range(col,-1,-1)):
if board[i][j]:
return False
for i,j in zip(range(row,N), range(col,-1,-1)):
if board[i][j]:
return False
return True
def solve(board, col):
if col >= N:
print_board(board)
return True
for i in range(N):
if is_safe(board, i, col):
board[i][col] = 1
if solve(board, col+1):
return True
board[i][col] = 0
return False
board = [[0]*N for _ in range(N)]
solve(board, 0)
Ln: 33 Col: 15
IDLE Shell 3.13.3
File Edit Shell Debug Options Window Help
Python 3.13.3 (tags/v3.13.3:6280bb5, Apr 8 2025, 14:47:33) [MSC v.1943 64 bit (
AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>>
=== RESTART: C:/Users/sindh/AppData/Local/Programs/Python/Python313/AI(2).py ===
Q . . . . . .
. . . . . Q .
. . . . Q . . .
. . . . . Q
. Q . . . . . .
. . . Q . . . .
. . . . . Q . .
. . Q . . . . .
>>>
Ln: 14 Col: 0


AI(3).py - C:/Users/sindh/AppData/Local/Programs/Python/Python313/AI(3).py (3.13.3)
File Edit Format Run Options Window Help
from collections import deque
def water_jug(cap_x, cap_y, goal):
visited = set()
q = deque([(0, 0)]) # start with both jugs empty
while q:
x, y = q.popleft()
if (x, y) in visited:
continue
visited.add((x, y))
print(x, y)
if x == goal or y == goal:
print("Goal Reached!")
return
possible operations
q.append((cap_x, y)) # fill X
q.append((x, cap_y)) # fill Y
q.append((0, y)) # empty X
q.append((x, 0)) # empty Y
# pour X -> Y
pour = min(x, cap_y - y)
q.append((x - pour, y + pour))
# pour Y -> X
pour = min(y, cap_x - x)
q.append((x + pour, y - pour))
# Example: Jug X=4 liters, Jug Y=3 liters, Goal=2 liters
water_jug(4, 3, 2)
Ln: 9 Col: 0
IDLE Shell 3.13.3
File Edit Shell Debug Options Window Help
Python 3.13.3 (tags/v3.13.3:6280bb5, Apr 8 2025, 14:47:33) [MSC v.1943 64 bit (
AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>>
=== RESTART: C:/Users/sindh/AppData/Local/Programs/Python/Python313/AI(3).py ===
0 0
4 0
0 3
4 3
1 3
3 0
1 0
3 3
0 1
4 2
Goal Reached!
>>>
Ln: 16 Col: 0


AI(4).py - C:/Users/sindh/AppData/Local/Programs/Python/Python313/AI(4).py (3.13.3)
File Edit Format Run Options Window Help
import itertools
def solve_crypt_arithmetic():
letters = "SENDMOREY"
digits = "0123456789"
for perm in itertools.permutations(digits, len(letters)):
assign = dict(zip(letters, perm))
if assign["S"] == "0" or assign["M"] == "0": # no leading zeros
continue
send = int(assign["S"] + assign["E"] + assign["N"] + assign["D"])
more = int(assign["M"] + assign["O"] + assign["R"] + assign["E"])
money = int(assign["M"] + assign["O"] + assign["N"] + assign["E"] + assi
if send + more == money:
print("SEND:", send, "MORE:", more, "MONEY:", money)
return
solve_crypt_arithmetic()
Ln: 21 Col: 24
IDLE Shell 3.13.3
File Edit Shell Debug Options Window Help
Python 3.13.3 (tags/v3.13.3:6280bb5, Apr 8 2025, 14:47:33) [MSC v.1943 64 bit (
AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>>
=== RESTART: C:/Users/sindh/AppData/Local/Programs/Python/Python313/AI(4).py ===
SEND: 9567 MORE: 1085 MONEY: 10652
>>>
Ln: 3 Col: 0